passing through the half-mirror 7 and for projecting a linearly polarized light component (S linear polarized light) of a first polarization direction toward the eye 1 under testing, a relay lens 9 disposed on a projection light axis of the polarization beam splitter 8 from the direction of the polarization beam splitter 8, an objective lens 11, a 1/4 wave plate, and an aperture diaphragm 14 arranged at a position approximately conjugate (including conjugate position ) to a pupil 18 of the eye 1 under testing. Further, there are provided a fixed target system 17 having a fixed target 15 and a condenser lens 16 facing toward the half-mirror 7. The light source 5 and the fixed target 15 are at positions conjugate to an ocular fundus of the eye 1 under testing. As to be described later, each of the light source 5 and the fixed target 15 forms an image at the ocular fundus. The light source 5 and the projection lens 6 are integrally designed, and these can be moved together with a focusing lens 19 along an optical axis as described later.

In common with the projection optical system 2 the photodetection optical system 3 shares: the polarization beam splitter 8, the relay lens 9 disposed on the projection light axis of the polarization beam splitter 8, the objective lens 11, and the 1/4 wave plate 13.

On the optical axis of the reflection light passing through the polarization beam splitter 8, there are provided the focusing lens 19 and an image forming lens 20. The focusing lens 19 can be moved along the optical axis of the reflection light. The image forming lens 20 forms the

reflected light beam as an image on a photoelectric detector 21, which is disposed at a position conjugate to the fundus of the eye 1 under testing.

A photodetection signal from the photoelectric detector 21 is stored at a storage unit 27 via a signal processing unit 26. Writing of data from the signal processing unit 26 to the storage unit 27 is controlled by a control unit 28. Based on the data stored at the storage unit 27, the control unit 28 performs required calculations, and the result of the calculation is displayed on a display unit 29.

Description will be given on the aperture diaphragm 14 referring to Fig. 2 (A), Fig. 2 (B), and Fig. 2 (C).

The aperture diaphragm 14 comprises three circular aperture plates 23, 24 and 25. The aperture plate 23 has a circular light shielding portion 23a at the center, and a peripheral annular portion serves as a transmitting portion 23b. The aperture plate 24 comprises a transmitting portion 24a in the same shape as the light shielding portion 23a and an annular light shielding portion 24b in the same shape as the transmitting portion 23b. In the aperture plate 25, two small fan-shaped portions are arranged at symmetrical positions, each having central angle of 45° as formed by dividing the circle in 8 equal parts, and these two small fan shaped portions serve as transmitting portions 25a and 25a. The remaining two large fan-shaped portions serve as light shielding portions 25b and 25b.

By combining the aperture plates 23, 24 and 25 together, as shown in Fig. 3, apertures of A1, A2, B1, B2, C1, C2, D1 and D2, and also, apertures of A'1, A'2, B'1, B'2, C'1, C'2,

D′1 and D′2 can be obtained.

For instance, when the aperture plate 25 is set to the condition shown in Fig. 2 (C) and the aperture plate 23 is combined with the aperture plate 25, the apertures A2 and A′2 can be obtained. When the aperture plate 24 is combined with the aperture plate 25, the apertures A1 and A′1 can be obtained.

Further, when the aperture plate 25 is rotated step by step each time at an angle of 45° and is combined with the aperture plates 23 and 24 at each step, it is possible to obtain the apertures A1, A2, B1, B2, C1, C2, D1 and D2, and also, the apertures A′1, A′2, B′1, B′2, C′1, C′2, D′1 and D′2.

In the following, operation of the above optical system is described.

A subject person with the eye 1 under testing is instructed to gaze at the fixed target 15, and the projection beam is projected by the projection optical system 2. A visible light is used for the fixed target 15, and an infrared light is used for the projection beam.

The projection light beam (infrared light) from the light source 5 passes through the projection lens 6 and the half-mirror 7 and reaches the polarization beam splitter 8. Then, the S linearly polarized light component is reflected by the polarization beam splitter 8, and this passes through the relay lens 9. It is projected to the fundus of the eye 1 under testing by the objective lens 11 via the 1/4 wave plate 13, and a primary index image is formed.

When the S linearly polarized light passes through the